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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,747	09/18/2003	Kendall E. Keene	OTD-030414 US	5426

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EXAMINER

PATEL, VISHAL A

ART UNIT	PAPER NUMBER
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3676

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,747

Applicant(s)

KEENE ET AL.

Examiner

Vishal Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/18/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, claim 1, “the first and second bodies and the annular gap between said first and second bodies” and claim 16, “said deformation results in said first ring deforming into an undulating wave pattern in an axial direction parallel to said longitudinal axis” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Specification

2. The disclosure is objected to because of the following informalities: Page 2, lines 5-7, "In the present invention, installation interference generated by the seals relaxed OD being larger than the ID the seal is being installed in and the seals relaxed ID being smaller than the OD the seal is being installed in", this language does not make sense, missing elements or grammatical errors.

Page 5, line 23, "12and" should be changed to --12 and--.

Appropriate correction is required.

Claim Objections

3. Claims 1-3 are objected to because of the following informalities:

Claim 1, Line 4, "the annular gap" should be changed to --the annular space--.

Claim 2, line 2, "said ends" should be changed to --said ends of the backup rings--.

Claim 3, line 2, "said ends" should be changed to --said ends of the backup rings--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver et al (US. 4,496,162) in view of Vanderford, Jr. (US. 4,381,114).

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McEver discloses a seal assembly for closing off an annular space between first and second bodies (inner body 18 and outer body having surface 12) and supported by at least one of the first and second bodies (intended use). The seal assembly comprising an annular shaped body (36) having an upper and a lower end (upper and lower end of 36 having backup rings 50 and 52), at least one backup ring (backup rings 50 and 52) mounted on the ends of the annular shaped body and having a relaxed dimension greater than the annular space (the body and the backup ring have a greater dimension than an annular space because backup rings 50, 52 and body 36 contact the bodies) between the first and second bodies so that opposed ends on the backup ring must be compressed to be inserted in the annular gap (the body and the backup rings are compressed). The backup rings having ends that loop toward each other (body backup rings 50 and 52 have ends 56a and 56b that loop toward each other). The body urges the ends of the backup rings away from each other (this is the case since the body 36 is between ends 56a and 56b). The backup rings are placed between the bodies and the backup rings apply a force to the bodies. The annular shaped body has an interference fit with the bodies. The annular shaped body having an inner circumferential surface that contacts a first body and an outer circumferential surface that contacts a second body (inner body 18 and outer body having surface 12).

McEver discloses the invention substantially as claimed above but fails to disclose that the backup ring further comprising a bend between the ends to store a force. Vanderford discloses a seal body having ends and the ends having backup rings with ends (figure 4, seal 64' having ends with backup rings having ends 86', 84', 90' and 92') and a seal body having ends (fig. 5, 100), the ends of the seal having backup rings having ends (fig. 5, backup rings having

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ends 110 and 107) and a bend (112) between the ends of the backup rings (fig. 5, 112 is between the ends of the backup rings). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the backup rings of McEver to have a bend between the ends of the backup rings as taught by Vanderford, to provide additional strength (column 3, lines 67-68 of Vanderford).

6. Claims 4-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver and Vanderford as applied to claim 1 above, and further in view of Kilmoyer (Us. 4,553,759).

McEver and Vanderford disclose the invention substantially as claimed above but fail to disclose that the body comprises at least one first ring in a first groove, the circumference of the first ring exceeds the circumference of the first groove and the first ring, when placed in contact with one of the first and second bodies, deforms in a manner so as to force the ends of the backup ring away from each other (when a ring is placed in a groove of the body of McEver and Vanderford would cause this because the ring will compress the annular body inwardly and this will cause the annular body to force the ends of the backup rings to move away from each other), a second ring in a second groove and the circumference of the second ring is shorter than the circumference of the second groove. Kilmoyer discloses a seal ring having a first groove (56), the first groove having a ring (48), a second groove (58) having a second ring (46), the circumference (outer circumference of the first ring 48) of the first ring exceeds the circumference of the first groove (the circumference of a bottom of the first groove and furthermore the first ring projects beyond the groove depth), the circumference of the second ring (inner circumference of the second ring) is shorter than the circumference of the second groove (the circumference of a bottom of the second groove and furthermore the ring projects

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beyond the groove depth), the rings are made of virgin PTFE (this material has a Durometer hardness of 40-65, evidence of this is showed by Czernik et al, US. 3,924,907), the first ring contacts a first body (22) and the second ring contacts a second body (26). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the annular body of McEver and Vanderford to have first and second grooves to have first and a second rings, the circumference of the first ring exceeds the circumference of the first groove, the circumference of the second ring is shorter than the circumference of the second groove, the rings are made of virgin PTFE and the rings contact the bodies as taught by Kilmoyer to provide a seal at low temperatures (column 3, lines 15-16 of Kilmoyer).

Regarding claims 10 and 12-13: The first ring is the second ring of Kilmoyer because the first ring has a shorter circumference than the groove and contacts with one of the bodies that has larger dimension.

Regarding claim 16: This is rejected because all the structural limitations is disclosed by McEver, Vanderford and Kilmoyer. The wave pattern in the axial direction is caused by the circumferential dimension of the first ring relative to the circumferential dimension of the first groove.

Regarding claim 7: McEver, Vanderford and Kilmoyer disclose the claimed invention except that the first ring circumference is 8-15% greater than the circumference of the first groove in which it is installed. Discovering an optimum range of a result effective variable involves only routine skill in the art. In re Kulling, 895 F.2d 1147, 14 USPQ 2d 1056. Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have

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been obvious to one having ordinary skill in the art at the time the invention was made to have the first ring circumference be in the range of 8-15% greater than the circumference of the first groove in which it is installed as a matter of design choice.

Regarding claim 11: McEver, Vanderford and Kilmoyer disclose the claimed invention except that the first ring circumference is in the range of at least about 6-20% shorter than the circumference of the first groove in which it is installed. Discovering an optimum range of a result effective variable involves only routine skill in the art. In re Kulling, 895 F.2d 1147, 14 USPQ 2d 1056. Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first ring circumference be in the range of at least about 6-20% shorter than the circumference of the first groove in which it is installed as a matter of design choice.

Regarding claims 14-15: McEver, Vanderford and Kilmoyer disclose the claimed invention except that the second ring is in an interference fit with one of the bodies to an extend of about 20% of the cross-section diameter of the second ring (meaning that 20% of the diameter is contacting the body). Discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have

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the second ring in an interference fit with one of the bodies to an extent of about 20% of the cross-section diameter of the second ring as a matter of design choice.

Regarding claim 18: McEver, Vanderford and Kilmoyer disclose the claimed invention except that the second ring circumference is in the range of at least about 6-20% shorter than the circumference of the second groove in which it is installed. Discovering an optimum range of a result effective variable involves only routine skill in the art. In re Kulling, 895 F.2d 1147, 14 USPQ 2d 1056. Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second ring circumference be in the range of at least about 6-20% shorter than the circumference of the second groove in which it is installed as a matter of design choice.

7. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver in view of Kilmoyer.

McEver discloses the invention substantially as claimed above in paragraph 5 but fails to disclose that the body comprises a first ring in a first groove, the circumference of the first ring exceeds the circumference of the first groove, when the first ring is placed in contact with one of the first and second bodies, the first ring deforms in a manner so as to force the ends of the backup ring away from each other (when a ring is placed in a groove of the body of McEver and Vanderford would cause this because the ring will compress the annular body inwardly and this will cause the annular body to force the ends of the backup rings to move away from each other), a second ring in a second groove and the circumference of the second ring is shorter than the

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circumference of the second groove. Kilmoyer discloses a seal ring having a first groove (56), the first groove having a ring (48), a second groove (58) having a second ring (46), the circumference (outer circumference of the first ring 48) of the first ring exceeds the circumference of the first groove (the circumference of a bottom of the first groove and furthermore the first ring projects beyond the groove depth), the circumference of the second ring (inner circumference of the second ring) is shorter than the circumference of the second groove (the circumference of a bottom of the second groove and furthermore the ring projects beyond the groove depth), the rings are made of virgin PTFE (this material has a Durometer hardness of 40-65, evidence of this is showed by Czernik et al, US. 3,924,907), the first ring contacts a first body (22) and the second ring contacts a second body (26). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the annular body of McEver to have first and second grooves to have first and a second rings, the circumference of the first ring exceeds the circumference of the first groove, the circumference of the second ring is shorter than the circumference of the second groove, the rings are made of virgin PTFE and the rings contact the bodies as taught by Kilmoyer to provide a seal at low temperatures (column 3, lines 15-16 of Kilmoyer).

Regarding claim 21: McEver and Kilmoyer disclose the claimed invention except that the second ring is in an interference fit with one of the bodies to an extend of about 20% of the cross-section diameter of the second ring (meaning that 20% of the diameter is contacting the body). Discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of

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this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second ring in an interference fit with one of the bodies to an extent of about 20% of the cross-section diameter of the second ring as a matter of design choice.

8. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver and Kilmoyer as applied to claim 22 above, and further in view of Vanderford.

McEver and Kilmoyer disclose the invention substantially as claimed above but fail to disclose that the backup rings further comprising a bend between the ends of the backup rings to store a force. Vanderford discloses a seal body having ends and the ends having backup rings with ends (figure 4, seal 64' having ends with backup rings having ends 86', 84', 90' and 92') and a seal body having ends (fig. 5, 100), the ends of the seal having backup rings having ends (fig. 5, backup rings having ends 110 and 107) and a bend (112) between the ends of the backup rings (fig. 5, 112 is between the ends of the backup rings). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the backup rings of McEver to have a bend between the ends of the backup rings as taught by Vanderford, to provide additional strength (column 3, lines 67-68 of Vanderford).

Regarding claim 25: This is rejected because all the structural limitations is disclosed by McEver, Vanderford and Kilmoyer. The wave pattern in the axial direction is caused by the circumferential dimension of the first ring relative to the circumferential dimension of the groove.

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Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Czernik et al, Magnani, Taylor, Keen et al, Frye, Zabcik, Dryer, Taylor, Dietle and Smith.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is (703) 308-8495. The examiner can normally be reached on Monday through Friday from 7:30 PM to 4:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann, can be reached on (703) 306-4115.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168. Technology Center 3600 Customer Service is available at 703-308-1113. General Customer Service numbers are at 800-786-9199 or 703-308-9000. Fax Customer Service is available at 703-872-9325.

Any response to this action should be mailed to:

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or faxed to: 703-872-9326, for formal communications for entry before Final action: or,
703-872-9327, for formal communications for entry after Final action.

Hand-delivered responses should be brought to Crystal Park Five, 2451 Crystal Drive, Arlington, Virginia, Seventh Floor (Receptionist suite adjacent to the elevator lobby).

VP
September 30, 2004



Vishal Patel
Patent Examiner
Tech. Center 3600